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Effects of Training Teachers to Use a Modified System of Least Prompts to Support Behaviors of Young Children

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EFFECTS OF TRAINING TEACHERS TO USE A MODIFIED SYSTEM OF LEAST PROMPTS TO SUPPORT BEHAVIORS OF YOUNG CHILDREN

THESIS

A thesis submitted in partial fulfillment of the
requirements for the degree of Masters of Science in Education in the
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ABSTRACT OF THESIS

EFFECTS OF TRAINING TEACHERS TO USE A MODIFIED SYSTEM OF LEAST PROMPTS TO SUPPORT BEHAVIORS OF YOUNG CHILDREN

There is much research conducted on training teachers to use the evidence-based teaching strategies known as system of least prompts. However, there is little research conducted on using a modified system of least prompt. This study examined the fidelity of implementation by two early childhood teachers using a modified system of least prompts with preschool aged children. A multiple-probe design across participants was used to determine the effect of fidelity of implementation of a modified system of least prompts strategy on the level of on-task student engagement. The results showed that early childhood teachers could implement the modified teaching strategy with fidelity while also increasing the level of on-task engagement.

KEYWORDS: Early Childhood Education, Fidelity of implementation, System of Least Prompts, Modified System of Least Prompts, On-task Engagement

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Introduction

According to the National Association of Child Care Resource and Referral Agencies (NACCRRA), there are a total of 15,060,140 children under the age of 6 years old that are potentially in need of childcare. In the state of Kentucky alone, the specific number of children needing childcare is 200,753. Research shows that by the age of 5, 90 percent of the architecture of a child's brain is already in place (Commonwealth of Kentucky, 2015). Because of this, it is critical that we provide "high- quality" childcare to young children. We must ensure that all children in childcare settings are growing and developing with well-educated teachers trained in early childhood education. Children receiving high-quality childcare have greater developmental outcomes in early childhood (Cooper & Costa, 2012). Teachers in early childhood education settings need to be trained in child development, evidence-based teaching strategies, embedding instruction, and challenging behaviors. If we can train teachers how to manage behavior with evidence-based teaching strategies, we can eliminate the frustration of not knowing what to do when specific behaviors occur in the classroom.

Children in childcare vary in age, race, ability, and family dynamics. Zagel, Kadar-Satat, Jacobs, and Glendinning (2013) conducted a study that examined lone and co-parent family situations and the effects they each had on children. The study looked closely at emotional and behavioral difficulties at the ages of four and five. Lone mothers themselves have reported their children's behaviors negatively compared to mothers in co-parent family situations. The differences in the emotional and behavioral well-being of these children can be attributed to material and social factors, including benefits receipt,

housing tenure, and maternal education. It has also been noted that challenging behaviors in young children occur frequently in children from low-income settings, (Holtz & Fox, 2012). With quality childcare scarce for families or lone mothers receiving welfare, it is important to train and educate teachers in childcare centers to allow all children the opportunities to be successful; what happens in childcare affects children's outcomes. Thorpe, Millear, and Petriwskyj (2012) state, "There is compelling evidence that educational experiences in the early years of life provide the foundation for attainments, well-being and social inclusion into adulthood." (p. 317). Childcare may be the primary source of social skills and academic skills for a young child before entering elementary school. It is critical that we provide early development opportunities through childcare settings as a way to establish a foundation for children's academic success, health, and general wellbeing (Anderson et al., 2003).

Challenging Behavior

Teachers in early childhood education will face a number of challenges in the classroom. One common issue in particular that teachers have the most difficulty identifying and addressing include challenging behaviors (Fullerton, Conroy & Correa, 2009). Early childhood educators have identified challenging behaviors as their greatest frustration (Wood, Ferro, Umbreit & Liaupsin, 2011). Challenging behaviors not only disrupt the classroom routine, but they also take away from the overall learning and exploring of the environment. In recent years there has been an increase in number of challenging behaviors in children (Hemmeter, Ostrosky, & Corson, 2011). Teachers are often eager to find strategies that they can use to help them deal with challenging

behaviors when they happen. “Challenging behavior has been defined as any behavior that interferes with children’s learning and development, is harmful to children and to others, and puts a child at risk for later social problems or school failure” (Fettig, Schultz, & Ostrosky, 2013, p. 30).

Occasionally encountering challenging behaviors can throw the teacher off balance from his or her daily routine and cause frustration. Training early childhood educators in evidence-based teaching strategies can decrease their frustration level. When children engage in challenging behaviors the importance of designing an effective behavior intervention cannot be overstated. Challenging behaviors can impact children’s development and learning negatively. Scholars are seeking to understand and develop prevention and intervention programs to help teachers facing these behaviors (Zaghlawan & Ostrosky, 2011). Early childcare teachers can be trained in evidence-based teaching strategies, which are strong tools for teachers to use to address behavior problems in young children.

System of Least Prompts

System of least prompts is one evidence-based teaching strategy that is effective at preventing and addressing challenging behaviors. This intervention can have positive outcomes when implemented correctly. West and Billingsley (2005) state that “the system of least prompts is one fading method designed to achieve appropriate student responding when only the natural cue is present.”(p. 131). West and Billingsley go on to describe the system of least prompts as a hierarchy where the presentation of a cue or prompt is given from least to most intrusive. Barton and Wolery (2010) conducted a

study using a multiple probe design that used system of least prompts to help promote pretend play in young children with disabilities. Barton and Wolery selected system of least prompts as their intervention method because system of least prompts has been implemented to fidelity in direct instruction arrangements and shown to be an effective strategy for training teachers to use new interventions. Filla, Wolery, and Anthony (1999) also conducted a study that explored the use of system of least prompts to increase the use of conversations in preschool aged children. A multiple baseline design was used to show the number of prompts given to each of the 9 participants over a series of sessions. The results from the study showed that "the prompting produced more conversations, more turns per conversations, and more talking than did the condition involving environmental modifications" (Filla, Wolery, & Anthony, 1999, p. 105). Research has proven that when a prompting hierarchy is used correctly, children respond positively.

Modified System of Least Prompts

There has been much research conducted on the evidence based teaching strategy of the system of least prompts. West and Billingsley (2005) explain that a verbal prompt serves as a signal for a learned behavior to occur outside the instructional situation. The system of least prompts presumes the prompt hierarchy that is ordered from least to most intrusive. In many cases, the least intrusive prompt is a verbal prompt. The West and Billingsley study compared the effects of the traditional least to most prompting procedures with those of a revised least to most prompting procedures. The main purpose of this study was to determine if simply removing a verbal prompt from the prompting sequence, for those students in which verbal prompts did not initially evoke the desired

behavior, could produce more proficient skill achievement with minimal errors than the traditional prompting sequence. The results for this study showed that both methods were effective. The results did indicate that fewer errors were made for all participants with the revised least to most prompting procedures. This study shows that the teaching strategy can be just as effective regardless where the verbal prompt is positioned within the hierarchy or if it is removed all together.

Training Teachers on Challenging Behaviors

Childcare settings are often ill equipped to effectively handle seriously challenging behaviors. Very few childcare providers hold a college degree in early childhood education, and many providers have little education beyond a high school level. Hale-Jinks, Knopf, and Kemple (2006) said, "Due to the high demand for teachers, entry-level childcare jobs are easily attainable by people with limited training." (p. 220). According to surveys conducted by teacher educators, new graduates do not have adequate information to design and implement intervention plans (Wood, Ferro, Umbreit, & Liaupsin, 2011). Most childcare settings rely mainly on the lead classroom teachers to handle challenging behaviors. This is problematic because head teachers as well as their assistant teachers have little formal education on behavior. With the high number of children in childcare settings it is critical that we adequately train all childcare providers to implement behavior interventions so that they are better equipped to handle challenging behaviors in the classroom. The research on teacher training all concludes that the implementation of professional development and teacher training is effective. Implementation of effective teaching strategies presented in professional development

trainings can be used to instruction teachers on the use of the strategies (Rudd et al., 2009).

Fidelity of Implementation

Childcare teachers not only need to be trained on intervention strategies but also on how to implement the intervention with procedural fidelity or treatment integrity (Gast, 2010). Procedural fidelity is necessary for interventions to be effective. “Fidelity of implementation is the degree to which a treatment/intervention is implemented as intended” (Harn, Parisi, & Stoolmiller, 2013, p. 182). Early childcare teachers need to be trained how to implement behavior interventions to fidelity. There is an essential need to design and implement effective interventions that teachers in early childhood settings can use to tackle children’s behavioral deficits (Fullerton, Conroy, & Correa, 2009). Without fidelity, it is difficult to determine an intervention’s effectiveness. If teachers do not implement evidence-based interventions as planned, measured outcomes cannot be accredited to the effectiveness of the intervention (Azano et al., 2001). When a childcare program is implemented to fidelity, it is easier to determine that program’s overall effectiveness. It can also show us whether or not the program needs to be restructured. “Fidelity of implementation reveals important information about the feasibility of an intervention- how likely it is that the intervention can and will be implemented with fidelity. If it is difficult to achieve fidelity of implementation in practice, a program has low feasibility. Programs that are implemented with high levels of fidelity but fail to produce desired effects may need to be redesigned” (Dusenbury et al., 2003, p. 240).

By training early childhood personnel to implement evidence-based teaching strategies with fidelity we can help teachers with reducing the frustration of challenging behaviors seen in the classroom. With the limited educational background childcare teachers have in challenging behaviors, there is a lot of variation in how behaviors are addressed. Through the training and coaching process, we can hopefully eliminate the use of ineffective behavior interventions.

Rationale

The current research tells us that evidence-based teaching strategies, such as system of least prompts are effective when implemented to fidelity. Research in the educational field primarily focuses on the evidence-based teaching strategy, system of least prompts to reduce problem behaviors. The purpose of this study is to examine the fidelity of implementation on a modified system of least prompts teaching strategy with early childhood teachers. This study will be conducted in an inclusive university-based early childhood setting with preschool aged children. This study adds to the literature by providing research-based data on fidelity of implementation and the use of a modified system of least prompts.

Research Question

1. With training, can early childhood personnel implement a modified system of least prompts teaching strategy to fidelity?
2. To what extend can preschool aged children increase the level of engagement during a classroom routine when early childhood personnel use a modified system of least prompts?

3. To what extent do personnel who are trained to use a modified system of least prompts during on task routines, generalize this strategy on other tasks?

Chapter Two: Methods

Participants

Students Two students who attended a university-based early childhood setting, 5 days a week for at least 3 hours per day served as participants in the study.

Participants selected to partake in this study met the following criteria: a) enrolled in the morning preschool session at university-based early childhood setting, b) between the ages of 3 and 5 years old, c) have parent or guardian permission to participate, d) struggle with verbal prompts and, e) an *Assessment, Evaluation, and Programming System* (AEPS, Bricker, 2002) adaptive score that fell below cut off.

The first student was a 3-year-old boy named Ryan. Ryan has attended the early-childhood setting since summer of 2014. Ryan is a social and out-going child who loved to play with cars and trucks in the block area of the classroom. Ryan tends to struggle with verbal directions during daily routines. When verbal directions were given, Ryan would completely ignore the task direction and continue to play or he would wander around the classroom. According to the AEPS, Ryan's score fell below what is considered typically developing in the area of adaptive, more specifically in the content strand of following directions of three or more steps that are given routinely.

The second student was a 3 year-old boy name Wesley. Wesley's attended the setting since August of 2014. Wesley is a typically developing boy who was interested and excited about everything preschool had to offer. Wesley quickly bounced around the classroom exploring various materials and activities. Wesley's engagement level seemed

to be questionably short and he struggled with following teacher verbal directions. According to the AEPS, Wesley's score fell below what is considered typically developing in the area of adaptive, more specifically in the content strand of following directions of three or more steps that are given routinely.

Selection Measure The AEPS (AEPS, Bricker, 2002) is a Curriculum Based and Criterion Referenced assessment. AEPS stands for Assessment Evaluation Programming System and is used to assess children birth to 3 years old and 3 to 6 years old. The assessment is broken down into six developmental areas; those are fine motor, gross motor, adaptive, cognitive, social-communication, and social. Within each development area there are strands, goals, and objectives. A child can receive a score of 2, 1, or 0. Receiving a score of 2 means the child has consistently and independently performed a skill specified in the criterion. A score of 1 means the child inconsistently performed a skill specified in the criterion. A score of 0 means the child does not perform the skill specified in the criterion. The AEPS also has a column for the teacher to mark if the child has the ability to master the skill but with some assistance or modification.

Instructors Two classroom teachers served as participants in this study. The first teacher in this study was Helen. Helen has been working as an assistant teacher at the university-based setting for 7 years. Helen graduated in 2009 with a bachelor's degree in Psychology. She is working towards a master's in Public Health. Helen has no experience with systematic teaching strategies.

The second teacher in the study was Caroline, a 36 year-old woman, with a master's and bachelor's degree in Interdisciplinary Early Childhood Education. Caroline has been teaching preschool since 2005 and has used various teaching strategies.

Reliability Data Collector

The reliability data collector in this study is Rosie, a 24 year-old woman with bachelor's degree in Interdisciplinary Early Childhood Education. Rosie is in her second year of graduate school where she was working towards a master's degree in Interdisciplinary Early Childhood Education. This is her third year working as an assistant at the university-based early childhood setting. Through university coursework and training, Rosie has had experience collecting data.

Setting

This study took place in two preschool classrooms between the times of 8:00 AM and 11:00 Am. The children are between the ages of 3 and 5 years old. The classrooms have diverse populations of students, with various ethnicities, cultures, and disabilities. Some of the children at the university-based early childhood setting receive special education services through the public preschool program.

Materials

The researcher used a video recording device to record daily sessions of the teacher and student during a classroom routine. The author used an Outline of Training, Procedural Reliability Data Checklist, and Momentary Time Sampling Data Sheet.

Homemade video clips were used during training sessions. All video clips were made specifically for this study by the researcher. Video clips were filmed in a preschool classroom at the university-based setting with children between the ages of 3 and 5 years old. Video clips were filmed during daily classroom routines: clean up and lunch.

Research Design

This study used a multiple probe design across participants to determine (a) the effects of fidelity of implementation on a modified system of least prompts with preschool aged children and (b) the percent of student on task behavior during a specific classroom routine.

General Procedures

A modified system of least prompts procedure was used to help the target child complete a daily classroom routine. Two teachers were trained to use a modified version of the teaching strategy, system of least prompts. Each teacher was assigned a target child who has been identified as needing help during a daily classroom routine. The independent variable in this study is the modified teaching strategy system of least prompts. The dependent variable is the percent of modified system of least prompts procedures followed by the teachers and the percent of child engagement of the routine.

Baseline

During baseline, the author video recorded teacher 1 and student 1 during the classroom routine of snack. After recording, the author coded the video for student on-task behavior. The author used a 10-second momentary time sampling to measure on-task

behavior during the routine. Allday and Pakurar (2007) defined on task behavior as (a) actively listening to teacher instructions, defined as being oriented toward the teacher or task and responding verbally or nonverbally; (b) following the teacher's instructions; (c) orienting appropriately toward the teacher or task; or (d) seeking help in the proper manner.

After coding the video and having at least 3 consecutive days of stable baseline data, the author began a training session with teacher 1. Baseline data on teacher 2 with student 2 was collected intermittently. Once teacher 1 reached criterion on correctly implementing the modified system of least prompts procedures with 80% accuracy, the author collected baseline data on teacher 2 for a minimum of 3 consecutive days. Once data were stable, teacher 2 began training.

Generalization

At least one generalization probe session occurred during baseline. The author recorded teacher 1 with student 1 during the daily routine of tooth brushing. After recoding, the author coded the generalization probe for student on-task engagement using a 10-second momentary time sampling.

Training Sessions

Following baseline data collection, the teachers were provided with a individual one time, 60-minute training session on the modified system of least prompts. The training sessions occurred in one of the preschool classroom at the university-based setting. The form developed will be provided for the author and teachers. During the

training session, the author and teaching assistance checked off and initial each item discussed.

During each training session, the author explained the purpose of the study and modified teaching strategy of system of least prompts. During that time, the teachers were provided with the Outline of Training for the modified system of least prompts. The author showed the teaching assistant short video clips of the modified system of least prompts procedures being implemented in the classroom during a daily routine. The video clips are provided as an example of how to properly implement the modified system of least prompt. After watching the video clips, the author asked the teaching assistant to role-play the modified system of least prompts procedures with the author. The author provided feedback during role-playing. Role-playing occurred until each teaching assistant implemented the modified system of least prompts at 100% accuracy. See appendix C for Outline of Training.

Coding Data

Teacher and student data were coded at the end of each day. The author watched the recording for that day, coding the student's on-task behavior and the teacher's use of the modified system of least prompts.

Student data were coded using 10-second momentary time sampling procedures. While watching the recording, the author used the momentary time sampling data collection sheet to record the findings. A (+) was used to indicate on task behavior. A (0) was used to indicate off task behavior.

Teacher data were coded using a procedural reliability data checklist. After coding the students on task behavior, the author watched the recording a second time, collecting reliability data on the implementation of the modified system of least prompt procedures for the teachers. The author checked off each step that was implemented by the teaching assistant on the procedural reliability data checklist. The formula used to determine the percentage of steps being implemented correctly was as follows: number of steps performed correct divided by the number of total steps (Gast, 2010). After coding all data on the student and teacher data, the findings were plotted on a graph.

Intervention

Modified System of Least Prompts The teacher used a modified system of least prompts to increase a student on-task behavior, during the daily classroom routine of snack. Snack consisted of six separate one-step directions. These six steps include the following: (1) go to snack, (2) wash your hands, (3) sit down at table, (4) serve yourself snack, (5) clean up your snack, and (6) wash your hands. In this study, the modified teaching strategy used the following prompting hierarchy: gesture, physical, and verbal. A verbal prompt was the most intrusive prompt in this modified teaching strategy. The teachers were trained on the modified system of least prompts procedures. Each teacher was assigned a target child. The teachers were video recorded implementing the modified teaching strategy with their target child daily. Procedural reliability data was collected daily for all six steps. Mastery of the modified teaching strategy was determined based on the teacher's implementing the modified system of least prompts procedures correctly at 80% for 5 consecutive days.

Procedural Reliability and Interobserver Agreement

Interobserver agreement data were collected during baseline, generalization and intervention phases. Interobserver agreement data were collected for at least 25% of all sessions. The formula used for interobserver agreement was as follows: the number of agreements divided by the total number of agreements and disagreements and multiplied by 100 (Gast, 2010). Procedural reliability data were collected daily by the author while watching the recorded video at the end of each day. The author checked to see if the teachers implement the modified system of least prompts teaching strategy to fidelity.

Maintenance

Maintenance data were collected on the teacher and student. Once the teacher mastered the modified system of least prompts teaching strategy to at least 80% fidelity for 5 consecutive days, maintenance data were then collected once per week every 2 weeks. The author recorded the teacher and student during the classroom routine once a week every 2 weeks. The author used the procedural reliability data checklist to record maintenance data.

The author also collected maintenance data on the student's on-task behavior using the momentary time sampling data collection sheet. The author watched the video recording for that week and coded the student's on-task behavior.

Generalization

Generalization sessions were conduced during baseline and intervention phases. Teacher 1 with student 1 and teacher 2 with student 2 generalized the modified evidence-

based teaching strategy, system of least prompts, during the daily classroom routine of tooth brushing. This was done to see if the teacher could continue to implement system of least prompts to fidelity during a different daily classroom routine. Generalization took place at least once a week during the intervention phase. Procedural reliability data along with student engagement data were collected during all generalization sessions.

Chapter Three: Results

Reliability

Dependent variable reliability Interobserver reliability was calculated using the point-by-point method. The number of agreements are divided by the total number of agreements and disagreements and multiplied by 100 (Gast, 2010). Interobserver reliability data were collected for 25% of all sessions. 80% reliability and above is considered acceptable reliability; 90% reliability and above is desired (Gast, 2010). Interobserver agreement data for on task engagement was 94% with a range of 85% to 100%. Interobserver agreement data for steps followed correctly was 100%.

Independent reliability Procedural reliability data were collected daily by the author while watching the recorded video at the end of each day. Procedural reliability is a measure of the extent to which the independent variable is implemented exactly as planned. For this study the author checked to see if the teachers implement the modified system of least prompts teaching strategy to fidelity. The author checked to see if the teachers followed the steps on the task analysis and if the prompting hierarchy was implemented correctly. See appendix E for the data sheet used to collect procedural reliability.

Both Helen and Caroline were able to reach fidelity of implementation using the modified system of least prompts strategy. Helen's average during baseline was 0%. After training Helen to use the modified system of least prompts teaching strategy, Helen was implementing the strategy at 76% (range= 42% -100%). Although Helens average for implementing the modified system of least prompt procedures was at 76%, she

reached mastery of the intervention in 8 days. For 5 or more consecutive days, Helen conducted the intervention at 80% or higher. Generalization was 85%, while maintenance was 82%.

Caroline's baseline average was 15%. After training, Caroline implemented the intervention 84% (range= 68% -100%). Mastery of the intervention was reached in 7 days. Generalization and Maintenance data show to be higher than intervention. Generalization was 93%, while maintenance data was 100%. Maintenance data was only collected once after reaching criteria.

Effectiveness Data

The results for the two students, Ryan and Wesley, are shown respectively in figure 3.2. Ryan and Wesley both increased their level of engagement during the daily classroom routines of snack and tooth brushing. There was a steady increase in the level of engagement when the teachers used the modified systems of least prompts procedures. The average percent of engagement for both students was 63%. Helen and Caroline reached fidelity of implementation of the modified system of least prompts strategy. Both teachers implemented the strategy for 5 consecutive days with 80% of higher.

Ryan. The results for Ryan are shown in figure 3.2. The results illustrate that when Helen implemented the modified system of least prompts during the routine of snack and tooth brushing, Ryan's level of on-task engagement increased. During baseline Ryan's average level of engagement was 46%. Once the intervention was introduced Ryan's percent of engagement increased steadily with the exception of two days where engagement dropped to 49% and 47%. This exception appeared to be due to the type of snack item

served on that day. On the days when cereal was served as snack, Ryan showed a lower percent in on-task engagement. The average during intervention was 63% (range= 47% - 77%).

Wesley. The results for Wesley are shown in figure 3.2. The results showed that when Caroline implemented the modified system of least prompts teaching strategy, Wesley's level of on-task engagement increased drastically. During baseline, Wesley's average was 41%. During intervention sessions Wesley jumped to 63% (range= 52% -83%). On two days Wesley's level of engagement dropped below 60%. This is again likely due to the type of snack served on that specific day.

Helen. The results for Helen are represented in figure 3.1. The results showed that during baseline, Helen percent of steps followed was consistently at 0%. After Helen was trained to use the modified system of least prompt, she was able to show an understanding of how to implemented the procedures. During the first two days of implementing the intervention, Helen's average for percent of steps followed was 48%. At this point, the author decided to conduct a second training sessions with Helen. Without an additional training session, Helen was at risk for not reaching fidelity of implementation. It should be noted that during those first two days of intervention, Helen used no praise, which drastically lowered the total percentage of steps followed. After the second training, there is a substantial increase in the number of steps followed by Helen.

Caroline. The results for Caroline are shown in figure 3.1. During baseline Caroline's percent of steps followed was between 14% and 17%. Caroline consistently gave the first initial task direction almost 100% of the time. After training Caroline on the modified

system of least prompts, the level of steps followed increased drastically. Caroline's familiarity with using the system of least prompts procedure allowed her to have a steady and consistent increase in the level of steps followed during the intervention phase.

Below are figures 3.1 and 3.2 showing that once the teachers implemented the modified system of least prompts strategy, the students were able to significantly increases their level of engagement during the routine of snack.

Figure 3.1 Percent of Steps Followed for Teachers

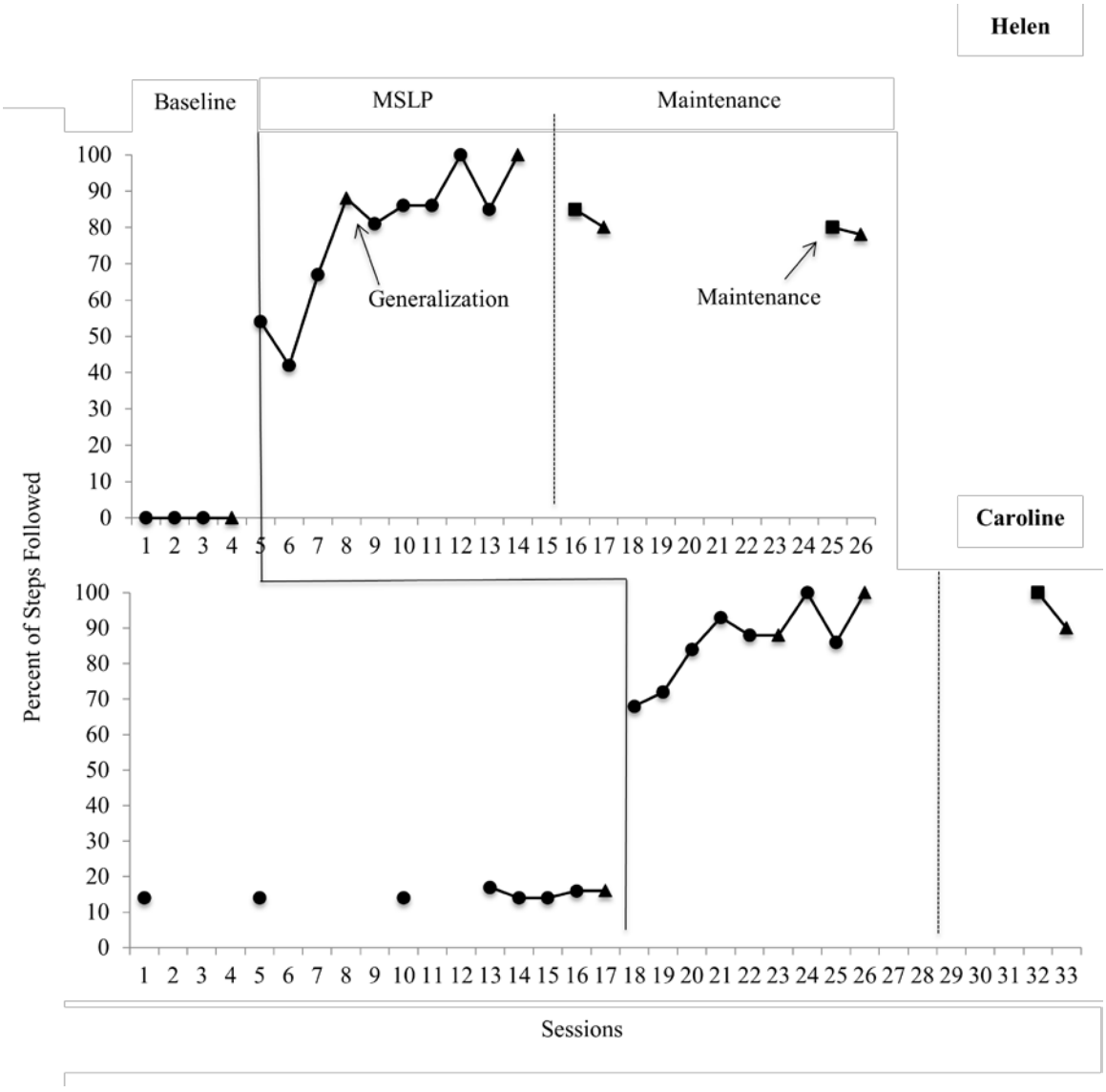
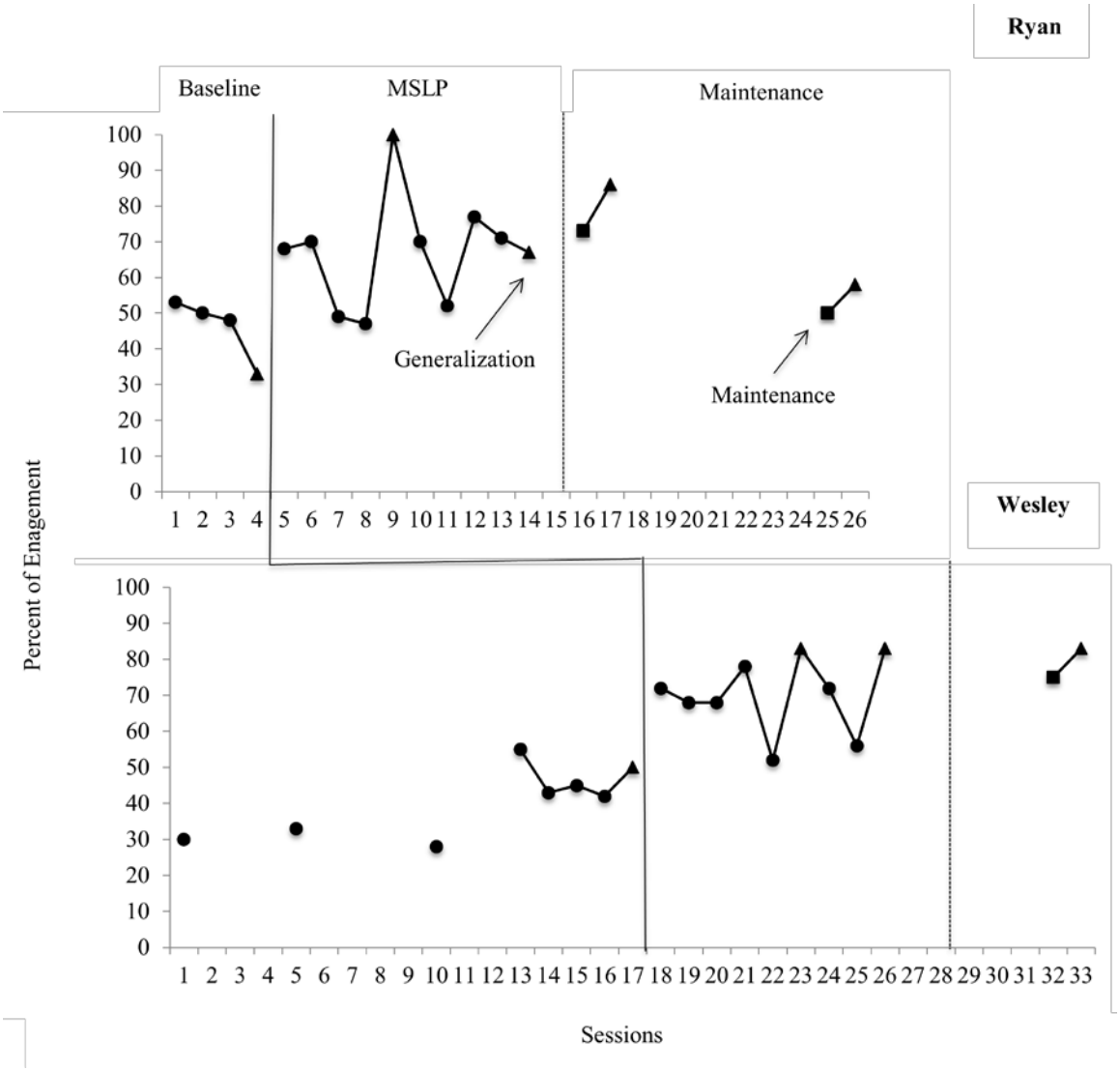


Figure 3.2 Percent of Engagement for Students



Chapter Four: Discussion

Through the use of a multiple probe design across participants, I was able to successfully teach two teachers to use a modified system of least prompts to increase student's level of on-task behavior during a specific classroom routine. Results show that with training, early childhood teachers can reach fidelity of implementation on the modified system of least prompts procedures, with preschool aged children to effectively help increase student level of on-task behavior during daily routines. The modified system of least prompts procedures can be used to increase the level of engagement during daily classroom routines. The results also showed that teachers could generalize the modified teaching strategy to other tasks conducted during the day.

The present study adds to the body of research involving fidelity of implementations. This study focused on using a modified teaching strategy to help increase student's level of engagement during classroom routines. The results showed early childhood teacher could be trained to use a modified teaching strategy to fidelity during routines that often show low levels of engagement. Much research discusses the need for effective interventions that can improve behavior deficits in early childhood (Fullerton, Conroy, & Correa, 2009). This study focused on a modified systematic teaching strategy where the teachers were trained specifically on that strategy alone. Past studies on fidelity of implementation have used curriculums as their primary intervention (Azano et al., 2001).

The present study also contributes to research conducted on modified teaching strategies. This study showed that students could increase their level of on-task engagement even when teachers use a non-traditional system of least prompt hierarchy. Similar to the West and Billingsley (2005) study, where a revised system of least prompts was used to increase skill acquisition with children who had moderate and severe disabilities. Both the West and Billingsley (2005) and the present study show that a non-traditional teaching methods can be just as effective as a traditional teaching method.

Teachers with and without degrees in Early Childhood Education can be trained to adequately and effectively use the modified system of least prompt procedures. Although, both teachers in this study reached fidelity of implementation on the modified strategy, teacher two showed a steady and consistent increase in percent of steps followed over the course of six weeks. Teacher one used no praise during the first two days of implementation of the intervention. Once a second training was conducted, she improved drastically. Throughout the course of this study, teacher one was reluctant to use the modified teaching strategy once the author stopped video recording her. Teacher two showed great interest and continued to use the strategy with Wesley during the routine of snack, even when not being recorded.

The level of on-task engagement was measured by using a 10-second momentary time sample during the entire routine of snack. Even though Ryan and Wesley both increased their level of on-task engagement during this daily routine, they both showed long periods of time when they were significantly not engaged. These periods of time ranged from one to two minutes with zero percent engagement. When Ryan showed to be

disengaged, he would play with his food by smashing his snack into his napkin. This typically happened when the snack was cereal. Ryan was less engaged when the snack presented was cereal. Wesley level of engagement was lower on days when snack was either bagels or cereal bars. When Wesley was not interested in the snack he would leave the table or fidget in his chair by moving his body around the seat.

Limitations of the Study

Although this study does not demonstrate a functional relationship, the data from the present study indicated that teachers in early childcare settings could implement the modified system of least prompts procedures to fidelity. In order for this study to prove a functional relationship, an additional replication of effect would need to be shown. There are some limitations to this study that should be discussed. First, although teacher 1 did not have any background knowledge in implementing a systematic teaching strategy, she had taught at the early childhood center for 7 years. Teacher 1 may have been pre-exposed to various teaching strategies. Secondly, teacher 2 learned the modified teaching strategy quickly. This may have been due to her previous knowledge and experience in implementing a variety of teaching strategies over her teaching career. Thirdly, the current study used a 3-second wait time with the modified system of least prompts procedures. The students that participated in the study may have benefited from a lengthened wait time. Lastly, each session was video recorded and later coded for student's level of on-task engagement and steps followed by the teachers. Originally the video recordings were put in place to help the researcher better examine the level of engagement of the students through a momentary time sampling with 10 second intervals.

The video recordings became tricky during baseline and maintenance sessions. This was due to the fact that the video recording device could not capture a wide enough view to see both students and teachers at all times.

Future Research

Future research in this area could include exploring the effectiveness of a modified system of least prompts procedures with children who have developmental delays or diagnosed disabilities. Research could also examine the efficiently of using a modified system of least prompts during other parts of a typical preschool day such as, circle time and during various transitions. It would also be interesting to further the comparison of the differencing hierarchies between a modified system of least prompts and a typical system of least prompts. Future research could investigate the effects of fidelity of implementation of teaching strategies in childcare centers where the personnel don't have an education level beyond high school or college degree. Finally, with the snack item's presented to the children not always being a preference. Future research could conduct a preference assessment to know if certain elements of the context, such as snack type, might be more naturally engaging than others.

APPENDIX A

Consent to Participate in a Research Study for Students

Effects of Training Teachers to Use a Modified System of Least Prompts to Support Behaviors of Young Children

WHY IS YOUR CHILD BEING INVITED TO TAKE PART IN THIS RESEARCH?

Your child is being invited to take part in a research study about training teachers to use a teaching strategy to support preschool aged children. Your child is being invited to take part in this research study to further evaluate the effectiveness of this instructional strategy. If you volunteer your child to take part in this study, he will be one of about four children to do so.

WHO IS DOING THE STUDY?

The person in charge of this study is Caitlin Beitel, a graduate student in the department of Early childhood, Special education, and rehabilitation consulting of University of Kentucky. She is being guided in this research by Dr. Lee Ann Jung, an Associate Professor in the same department. There may be other people on the research team assisting at different times during the study.

WHAT IS THE PURPOSE OF THIS STUDY?

The purpose of this study is to determine if early childhood educators can learn and use a new teaching strategy. Specifically, this study will focus on using a series of prompts (gesture, physical, and verbal) to determine if this strategy can increase the amount of time a child attends to daily classroom routines.

ARE THERE REASONS WHY YOUR CHILD SHOULD NOT TAKE PART IN THIS STUDY?

A preschool research subject would not take part in this study if there were not enrolled in a preschool classroom at the university based setting and not between the ages of 3-5 years old.

WHERE IS THE STUDY GOING TO TAKE PLACE AND HOW LONG WILL IT LAST?

The study will be conducted at University of Kentucky Early Childhood Laboratory, during normal classroom time. All data collection will occur during your child's typical class time. Data for this study will be collected for 10 minutes per day for up to 6 weeks.

WHAT WILL YOUR CHILD BE ASKED TO DO?

The research will take place during the normal classroom routine. There will be no change to your child's routine; however, your child's teacher will use a new teaching strategy with the intention of increasing your child's participation during that routine. Your child will not be asked to complete activities or routines that are not normally given. The principal investigator of the study will video record your child during this routine.

WHAT ARE THE POSSIBLE RISKS AND DISCOMFORTS?

To the best of our knowledge, the things your child will be doing have no more risk of harm than he would experience in everyday life.

WILL YOUR CHILD BENEFIT FROM TAKING PART IN THIS STUDY?

There is no guarantee that you or your child will get any benefit from taking part in this study. Your child's willingness to take part, however, may, in the future, help society as a whole better understand this research topic.

DOES YOUR CHILD HAVE TO TAKE PART IN THE STUDY?

If you decide to allow your child to take part in the study, it should be because you really want to. Your child will not lose any benefits or rights; your child would normally have if you choose not to volunteer. Your child can stop at any time during the study and still keep the benefits and rights your child had before volunteering. If you decide not to allow your child to take part in this study, your decision will have no effect on the quality of care or services your child receives.

IF YOUR CHILD DOESN'T WANT TO TAKE PART IN THE STUDY, ARE THERE OTHER CHOICES?

If you do not want your child to take part in the study, there are no other choices except not to take part in the study.

WHAT WILL IT COST YOUR CHILD TO PARTICIPATE?

There are no costs associated with taking part in the study.

WILL YOUR CHILD RECEIVE ANY REWARDS FOR TAKING PART IN THIS STUDY?

Neither you nor your child will receive any rewards or payment for taking part in the study.

WHO WILL SEE THE INFORMATION THAT YOUR CHILD GIVES?

We will make every effort to keep confidential all research records that identify you and your child to the extent allowed by law.

Your child's information will be combined with information from other people taking part in the study. When we write about the study to share it with other researchers, we will write about the combined information we have gathered. Neither you nor your child personally identified in these written materials. We may publish the results of this study; however, we will keep your child's name and other identifying information private.

We will make every effort to prevent anyone who is not on the research team from knowing that you and your child gave us information, or what that information is. All information collected will be stored at the University of Kentucky and will be kept for 6 years after the completion of the study.

We will keep private all research records that identify you to the extent allowed by law. However, there are some circumstances in which we may have to show your information to other people. For example, the law may require us to show your information to a court. Also, we may be required to show information which identifies your child to people who need to be sure we have done the research correctly; these would be people from such organizations as the University of Kentucky.

CAN YOUR CHILD TAKING PART IN THE STUDY END EARLY?

If you decide to allow your child to take part in the study you still have the right to decide at any time that you no longer want your child to continue. Your child will not be treated differently if you decide to stop allowing him to take part in the study.

The individuals conducting the study may need to withdraw your child from the study. This may occur if your child is not able to follow the directions they give your child or if they find that your child being in the study is more risk than benefit to your child. There will be no consequence if your child withdraws or if the individual conducting the study may need to withdraw your child from the study.

WHAT ELSE DO YOU NEED TO KNOW?

There is a possibility that the data collected from your child may be shared with other investigators in the future. If that is the case the data will not contain information that can identify your child unless you give your consent or the UK Institutional Review Board (IRB) approves the research. The IRB is a committee that reviews ethical issues, according to federal, state and local regulations on research with human subjects, to make sure the study complies with these before approval of a research study is issued.

WHAT IF YOU OR YOUR CHILD HAVE QUESTIONS, SUGGESTIONS, CONCERNS, OR COMPLAINTS?

Before you decide whether to accept this invitation for your child to take part in the study, please ask any questions that might come to mind now. Later, if you have questions, suggestions, concerns, or complaints about the study, you can contact the investigator, Caitlin Beitel at (513) 413-2653. If you or your child have any questions about your child's rights as a volunteer in this research, contact the staff in the Office of Research Integrity at the University of Kentucky between the business hours of 8am and 5pm EST, Mon-Fri. at 859-257-9428 or toll free at 1-866-400-9428. We will give you a copy of this consent form to take with you. We will send home two copies of this consent form. Please sign one and send back to Caitlin Beitel and keep one copy for your records.

_____ _____

Name of child agreeing to take part in the study Date

_____

Signature of parent/guardian agreeing to take part in the study

APPENDIX B

Consent to Participate in a Research Study for Instructors

Effects of Training Teachers to Use a Modified System of Least Prompts to Support Behaviors of Young Children

WHY ARE YOU BEING INVITED TO TAKE PART IN THIS RESEARCH?

You are being invited to take part in a research study about training teachers to use a teaching strategy to support preschool aged children. You are being invited to take part in this research study to further evaluate the effectiveness of this instructional strategy. If you volunteer to take part in this study, you will be one of about four people to do so.

WHO IS DOING THE STUDY?

The person in charge of this study is Caitlin Beitel, a graduate student in the department of Early childhood, Special education, and rehabilitation consulting of University of Kentucky. She is being guided in this research by Dr. Lee Ann Jung, an Associate Professor in the same department. There may be other people on the research team assisting at different times during the study.

WHAT IS THE PURPOSE OF THIS STUDY?

The purpose of this study is to determine if early childhood educators can learn and use a new teaching strategy. Specifically, this study will focus on using a series of prompts (gesture, physical, and verbal) to determine if this strategy can increase the amount of time a child attends to daily classroom routines.

ARE THERE REASONS WHY YOU SHOULD NOT TAKE PART IN THIS STUDY?

A teacher or teaching assistant research subject would not take part in this study if they were not a teacher or teaching assistant at the university based setting during the hours of 8:00 and 11:00am or if they had previously received training in the modified system of least prompts teaching strategy.

WHERE IS THE STUDY GOING TO TAKE PLACE AND HOW LONG WILL IT LAST?

The study will be conducted at University of Kentucky Early Childhood Laboratory, during normal classroom time. All data collection will occur during your child's typical

class time. Data for this study will be collected for 10 minutes per day for up to 6 weeks. In addition you will be asked to participate in a one time, 60-minute training.

WHAT WILL YOU BE ASKED TO DO?

The research will take place in the normal classroom environment. You will receive a one time, 60-minute training on a modified system of least prompts teaching strategy. The training will consists of watching a video of the strategy and role-playing. Following the training you will be asked to implement this stagey for approximately 10-minutes a day. The principal investigator of the study will video record you implementing the learned stagey.

WHAT ARE THE POSSIBLE RISKS AND DISCOMFORTS?

To the best of our knowledge, the things you will be doing have no more risk of harm than you would experience in everyday life.

WILL YOU BENEFIT FROM TAKING PART IN THIS STUDY?

There is no guarantee that you will get any benefit from taking part in this study. Your willingness to take part, however, may, in the future, help society, as a whole better understand this research topic.

DO YOU HAVE TO TAKE PART IN THE STUDY?

If you decide to take part in the study, it should be because you really want to. You will not lose any benefits or rights you would normally have if you choose not to volunteer. You can stop at any time during the study and still keep the benefits and rights you had before volunteering. As a student, if you decide not to take part in this study, your choice will have no effect on your academic status or grade in the class.

IF YOU DON'T WANT TO TAKE PART IN THE STUDY, ARE THERE OTHER CHOICES?

If you do not want to be in the study, there are no other choices except not to take part in the study.

WHAT WILL IT COST YOU TO PARTICIPATE?

There are no costs associated with taking part in the study.

WILL YOU RECEIVE ANY REWARDS FOR TAKING PART IN THIS STUDY?

You will not receive any rewards or payment for taking part in the study.

WHO WILL SEE THE INFORMATION THAT YOU GIVE?

We will make every effort to keep confidential all research records that identify you to the extent allowed by law.

Your information will be combined with information from other people taking part in the study. When we write about the study to share it with other researchers, we will write about the combined information we have gathered. You will not be personally identified in these written materials. We may publish the results of this study; however, we will keep your name and other identifying information private.

We will make every effort to prevent anyone who is not on the research team from knowing that you gave us information, or what that information is. All information collected will be stored at the University of Kentucky and will be kept for 6 years after the completion of the study.

We will keep private all research records that identify you to the extent allowed by law. However, there are some circumstances in which we may have to show your information to other people. For example, the law may require us to show your information to a court. Also, we may be required to show information which identifies you to people who need to be sure we have done the research correctly; these would be people from such organizations as the University of Kentucky.

CAN YOUR TAKING PART IN THE STUDY END EARLY?

If you decide to take part in the study you still have the right to decide at any time that you no longer want to continue. You will not be treated differently if you decide to stop taking part in the study.

The individuals conducting the study may need to withdraw you from the study. This may occur if you are not able to follow the directions they give you or if they find that your being in the study is more risk than benefit to you. There will be no consequence if you withdraw or if the individual conducting the study may need to withdraw you from the study.

WHAT ELSE DO YOU NEED TO KNOW?

There is a possibility that the data collected from you may be shared with other investigators in the future. If that is the case the data will not contain information that can identify you unless you give your consent or the UK Institutional Review Board (IRB) approves the research. The IRB is a committee that reviews ethical issues,

according to federal, state and local regulations on research with human subjects, to make sure the study complies with these before approval of a research study is issued.

WHAT IF YOU HAVE QUESTIONS, SUGGESTIONS, CONCERNS, OR COMPLAINTS?

Before you decide whether to accept this invitation to take part in the study, please ask any questions that might come to mind now. Later, if you have questions, suggestions, concerns, or complaints about the study, you can contact the investigator, Caitlin Beitel at (513) 413-2653. If you have any questions about your rights as a volunteer in this research, contact the staff in the Office of Research Integrity at the University of Kentucky between the business hours of 8am and 5pm EST, Mon-Fri. at 859-257-9428 or toll free at 1-866-400-9428. We will give you a signed copy of this consent form to take with you. We will give you a copy of this consent form to take with you. We will send home two copies of this consent form. Please sign one and send back to Caitlin Beitel and keep one copy for your records.

_____ _____

Signature of person agreeing to take part in the study Date

_____

Printed name of person agreeing to take part in the study

APPENDIX C

Outline for Training

Date: Start/End time:

Directions: Check off and initial each item as it is discussed during the training sessions

1. Explanation of Outline for Training
2. Purpose of study
3. How the intervention will fit in to daily classroom routines
4. Explanation of the modified system of least prompts
5. Introduction of video clips
    a. Discussion of ways to implement strategy
    b. Answer any questions
6. Role-play modified system of least prompts
    a. Provided feedback
    b. Answer any questions
7. Explanation of how this will occur

APPENDIX D

Modified System of Least Prompts Hierarchy

1. Gesture
2. Physical
3. Verbal

Modified System of Least Prompts Procedures

1. Deliver task direction
2. Wait 3 second for the learner to respond independently
3. If the learner responds correctly, give praise; if there is not a response, give the first least intrusive prompt in the hierarchy (GESTURE WITH NO VERBAL DIRECTION TO THE CHILD) and wait 3 seconds for the learner to respond
4. If the learner responds correctly, give praise; if there is not a response, give the second least intrusive prompt in the hierarchy (PHYSICAL WITH NO VERBAL DIRECTION TO THE CHILD) and wait 3 seconds for the learner to respond
6. If the learner responds correctly, give praise; if there is not a response, give the Fourth least intrusive prompt in the hierarchy (VERBAL WITH NO VERBAL DIRECTION TO THE CHILD) and wait 3 seconds for the learner to respond
7. Praise the correct response

APPENDIX E

Procedural Reliability Data Checklist

Name:_____ Instructor: _____Routine:_____

Date: _____ Time: _____ Setting:_____

Implemented **(✓ = correct** **X = incorrect** **0 = no opportunity)** **One–step direction**						**Steps**
1	**2**	**3**	**4**	**5**	**6**	
						1. Deliver task direction
						2. Wait 3 second for the learner to respond independently
						3. If the learner responds correctly, give praise; if there is not a response, give the first least intrusive prompt in the hierarchy (GESTURE WITH NO VERBAL DIRECTION TO THE CHILD) and wait 3 seconds for the learner to respond
						4. If the learner responds correctly, give praise; if there is not a response, give the second least intrusive prompt in the hierarchy (PHYSICAL WITH NO VERBAL DIRECTION TO THE CHILD) and wait 3 seconds for the learner to respond
						5. If the learner responds correctly, give praise; if there is not a response, give the Fourth least intrusive prompt in the hierarchy (VERBAL) and wait 3 seconds for the learner to respond
						6. Praise the correct response

Summary: _____ # of steps followed / _____ # of steps that should have been followed = _____

IOA: (_____ # of agreements / _____ # agreements and disagreements) X 100 = _____

APPENDIX F

Momentary Time Sampling Data Sheet

Name:_____ Instructor: _____Routine:_____

Date: _____ Time: _____ Setting:_____

On Task Behavior	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	Total
Record a (+) or occurrence or (-) for non-occurrence													

On Task Behavior	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	Total
Record a (+) or occurrence or (-) for non-occurrence													

On Task Behavior	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	Total
Record a (+) or occurrence or (-) for non-occurrence													

On Task Behavior	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	Total
Record a (+) or occurrence or (-) for non-occurrence													

On Task Behavior	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	:10 Sec	Total
Record a (+) or occurrence or (-) for non-occurrence													

Summary: _____ # of occurrences / _____ :10 sec intervals x _____ total # of minutes = _____

IOA: (_____ # of agreements / _____ # agreements and disagreements) X 100 = _____

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Vita

Caitlin E. Beitel was born in Columbus, Ohio. After graduating in May 2008 from Lakota East High School in Cincinnati, Ohio, she attended the University of Kentucky. There she received her Bachelor's Degree in Interdisciplinary Early Childhood Education in May 2013. She taught in a early childhood setting at the University of Kentucky from 2013 to present.